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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,038	07/24/2003	Oleg Siniaguine	M-7554-1D US	3735
32605	7590	06/28/2005	EXAMINER	
MACPHERSON KWOK CHEN & HEID LLP 1762 TECHNOLOGY DRIVE, SUITE 226 SAN JOSE, CA 95110			ARANCIBIA, MAUREEN GRAMAGLIA	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 06/28/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,038

Applicant(s)

SINIAGUINE ET AL.

Examiner

Maureen G. Arancibia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 1 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claim 1, drawn to an article processed by plasma, classified in class 428, subclass 543.
 - II. Claims 2-14, drawn to an apparatus for generating rotational motion of a substrate, classified in class 156, subclass 345.55.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case In this case the product can be made by any other means that would provide a product with the same specifications, i.e. a particular smoothness or shape could be imparted to a workpiece by a plasma treatment that does not require the simultaneous rotation of the workpiece about three independent axes.
3. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Michael Shenker on 05/31/2005 a provisional election was made with traverse to prosecute the invention of Group II,

claims 2-14. Affirmation of this election must be made by applicant in replying to this Office action. Claim 1 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The disclosure is objected to because of the following informalities: On Page 1, Line 9, it is suggested to insert "now U.S. Patent No. 6,749,764," after "2000,". On Page 1, Line 31, it is suggested to insert "now U.S. Patent No. 6,139,678," after "08/975,403". On Page 4, Line 3, it is suggested to insert "now U.S. Patent No. 6,287,976," after "09/315,122". On Page 7, Line 11, it is suggested to correct "body 150B" to "body 502B". On Page 10, Line 4, it is suggested to insert "now U.S. Patent No. 6,203,661" after "Holder"". On Page 10, Line 5, it is suggested to insert "now U.S. Patent No. 6,402,843" after "Holder"". On Page 10, Line 7, it is suggested to insert "now U.S. Patent No. 6,168,697" after "Methods"". On Page 10, Line 29, it is suggested to correct "spindle 140X" to "spindle 140S". On Page 14, Line 3, it is suggested to correct "Fig. 17" to "Fig. 16". On Page 14, Line 32, it is suggested to insert "now U.S. Patent No. 6,203,661" after "09/457,042,".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claim 2 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of U.S. Patent 5,474,642 to Zorina et al.**

In regards to Claim 2, AAPA teaches an apparatus (Figure 1) for moving an article 130 through plasma 120, the apparatus comprising: a first arm 150A rotatable around a first axis 150X and a second arm 140A rotatably attached to the first arm to rotate an article around a second axis 140X.

AAPA does not expressly teach a rotational mechanism for inducing a rotational motion of the article in addition to, and simultaneously with, the rotation of the first and second arms.

Zorina et al. teaches a rotational mechanism 36 for inducing a rotational motion of an article 8 about an axis running through the center of said article (Figure 7) in addition to rotation of an arm connected to an article holder 9 about a different axis (Figure 7; Column 6, Lines 59-66)

It would have been obvious to one of ordinary skill in the art to modify AAPA to include the rotational mechanism of Zorina et al. to induce a rotational motion of the article about its own axis. The motivation for inducing such rotational motion, as taught

by Zorina et al. (Column 6, Lines 59-66), would have been to increase throughput by allowing articles that are larger in diameter than a plasma jet to be treated by the plasma.

In regards to Claims 9, 10, and 12, AAPA teaches a plasma source 114 and an article 130 with a surface to be processed, where the surface to be processed is moved in and out of a plasma jet 120. (AAPA; Specification; Page 2, Lines 7-9) The combination of AAPA and Zorina et al. teaches that the article to be processed has a surface to be treated, but that said surface is larger than the diameter of the plasma jet emitted by the source. (AAPA; Specification; Page 2, Lines 7-9; Zorina et al. ; Column 6, Lines 59-66) Thus, it would always be true that when the plasma contacts the article, a distance between the first axis and the plasma region would be greater than a distance between the first axis and the edge of the surface; i.e. the entire surface is not covered by plasma.

In regards to Claim 11, the scenario claimed would be true of the apparatus taught by the combination of AAPA and Zorina et al. due to the three rotational degrees of freedom. Moreover, the apparatus taught by the combination of AAPA and Zorina et al. would inherently be capable of being operated with any combination of angular velocities about each axis.

In regards to Claim 13, AAPA teaches that the article processing is performed at atmospheric pressure. (Specification; Page 2, Line 7)

In regards to Claim 14, the apparatus taught by AAPA would be capable of performing a plasma etch. (Specification; Page 1, Lines 21-27)

9. Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Zorina et al. as applied to claim 2 above, and further in view of U.S. Patent 6,845,733 to Tokmulin et al.

The teachings of AAPA and Zorina et al. were discussed above.

The combination of AAPA and Zorina et al. does not expressly teach that the rotational mechanism comprises a rotatable member for rotating the article and a link coupled to a body attached to the first arm and to the rotatable member; that the link is driven by the rotatable member due to rotation about the second axis, and the link causes the rotatable member to rotate the article; that the rotatable member is coupled to an edge of the article held in a non-contact article holder; or that the article holder comprises a member coupled to a side of the article by a centrifugal force developed by rotation of the second arm, thereby driving the article from the rotational mechanism.

Tokmulin et al. teaches a rotational mechanism for inducing a rotational motion of an article 29 about an axis running through the center of said article (Figure 3; Column 3, Lines 42-60; Column 4, Lines 28-29) in addition to rotation of a first arm about an axis 13 (Figure 3; Column 1, Line 67 - Column 2, Line 8; Column 3, Lines 42-60). The mechanism comprises a rotatable member 14 for rotating the article 29 and a link 24 coupled to a body 21 and to the rotatable member 14, wherein the link is driven by the rotatable member due to rotation about the axis 13, and the link causes the rotatable member to rotate the article. (Figure 3; Column 3, Line 57-60; Column 4, Lines 28-30). The rotatable member 14 is coupled to the edge of the article 29 held in a non-contact (vortex) article holder. (Figure 4) The non-contact article holder comprises a member

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17 (Figure 4; Column 3, Lines 55-56), which would inherently be coupled to the side of the article 29 by a centrifugal force developed by rotation about axis 13, to drive the article itself from the rotational mechanism.

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by the combination of AAPA and Zorina et al. to include the rotational mechanism and non-contact article holder of Tokmulin et al. The motivation for using the rotational mechanism of Tokmulin et al., as taught by Tokmulin et al. (Column 2, Lines 38-42), would have been to implement the rotation of the article about its own axis using a shared rotary drive that also generates rotary motion about its own axis (the claimed second axis). The motivation for using the non-contact (vortex) holders taught by Tokmulin et al., as taught by Tokmulin et al. (Column 1, Lines 54-56; Column 2, Line 56 - Column 3, Line 24), would have been to allow uniform treatment of the articles without the surface damage imposed by contact holders.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1 and 9-14 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, and 3 of U.S. Patent No. 6,139,678 ('678) to Siniaguine (from Applicant's IDS) in view of U.S. Patent 6,105,534 ('534) to Siniaguine et al. (from Applicant's IDS), or alternatively as being unpatentable over claim 1 of U.S. Patent No. 6,261,375 ('375) to Siniaguine et al. in view of U.S. Patent 6,105,534 ('534) to Siniaguine et al., or alternatively as being unpatentable over claim 1 of U.S. Patent No. 6,105,534 ('534) to Siniaguine et al. in view of U.S. Patent 6,139,678 ('678) to Siniaguine.

Claim 1 of '678 and Claim 1 of '375 each recite an apparatus comprising a plasma source and an apparatus for moving an article through the plasma by rotating the article about two axes.

'534 teaches a rotational mechanism for rotating an article about an axis extending through the article and about a central axis. (Figure 1; Column 3, Lines 21-45)

It would have been obvious to one of ordinary skill in the art to modify the apparatus recited by Claim 1 of '678 or Claim 1 of '375 to include the rotational mechanism of '534 to induce a rotational motion of the article about its own axis. The motivation for inducing such rotational motion, as taught by '534 (Column 2, Lines 26-65), would have been to increase throughput and process articles uniformly.

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In the alternative, Claim 1 of '534 recites an apparatus comprising a plasma source and a rotational mechanism for moving an article through a plasma by rotating an article about an axis extending through the article and about a central axis.

'678 teaches an apparatus for moving an article through a plasma by rotating the article about two axes. (Figure 1)

It would have been obvious to one of ordinary skill in the art to modify the apparatus of '534 to introduce rotational motion about a third, central axis, as taught by '678. The motivation for doing so would have been to move an entire article carousel over a plasma source, allowing another carousel to be loaded and thereby increasing throughput. ('678; Figure 7; Column 3, Lines 4-12)

In regards to Claims 9-14, the apparatus taught by any of the foregoing combinations would inherently have been capable of being operated in the claimed manner.

Claim Rejections - 35 USC § 103

12. Claims 1 and 9-14 rejected under 35 U.S.C. 103(a) as being unpatentable over '678 in view of '534, or alternatively over '375 in view of '534, or alternatively over '534 in view of '678.

The basis for these rejections is the same as was discussed in the obviousness-type double patenting rejections.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,467,297 to Bollinger et al. teaches a related non-

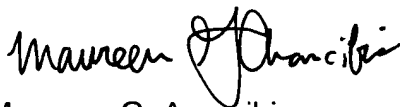
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contact (vortex) article holder. U.S. Patent 3,562,140 to Skinner et al. teaches a rotational mechanism (Figure 3) with a link.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571) 272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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